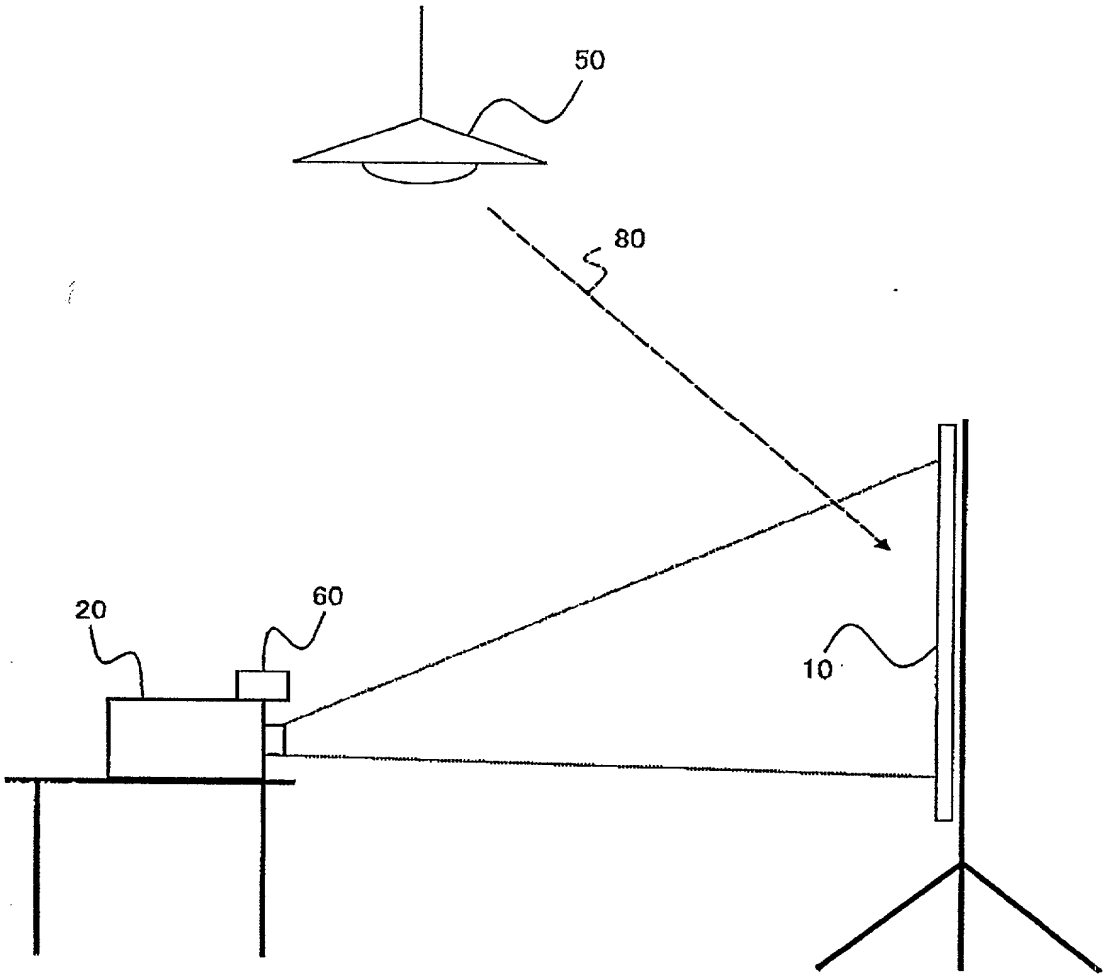

FIGURE 1

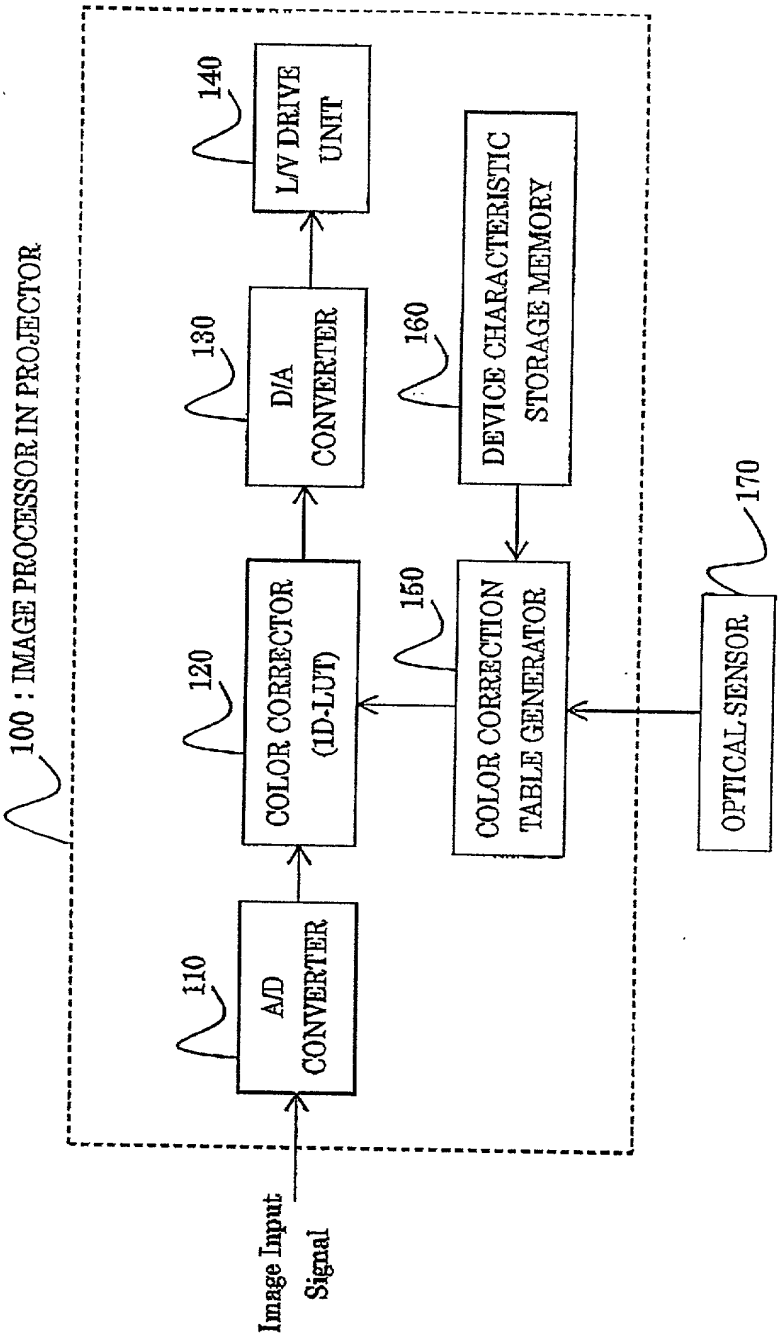
100 : IMAGE PROCESSOR IN PROJECTOR
110
A/D CONVERTER
120
COLOR CORRECTOR (1D-LUT)
130
D/A CONVERTER
140
L/V DRIVE UNIT
150
COLOR CORRECTION TABLE GENERATOR
160
DEVICE CHARACTERISTIC STORAGE MEMORY
170
OPTICAL SENSOR
Image Input Signal

FIGURE 2

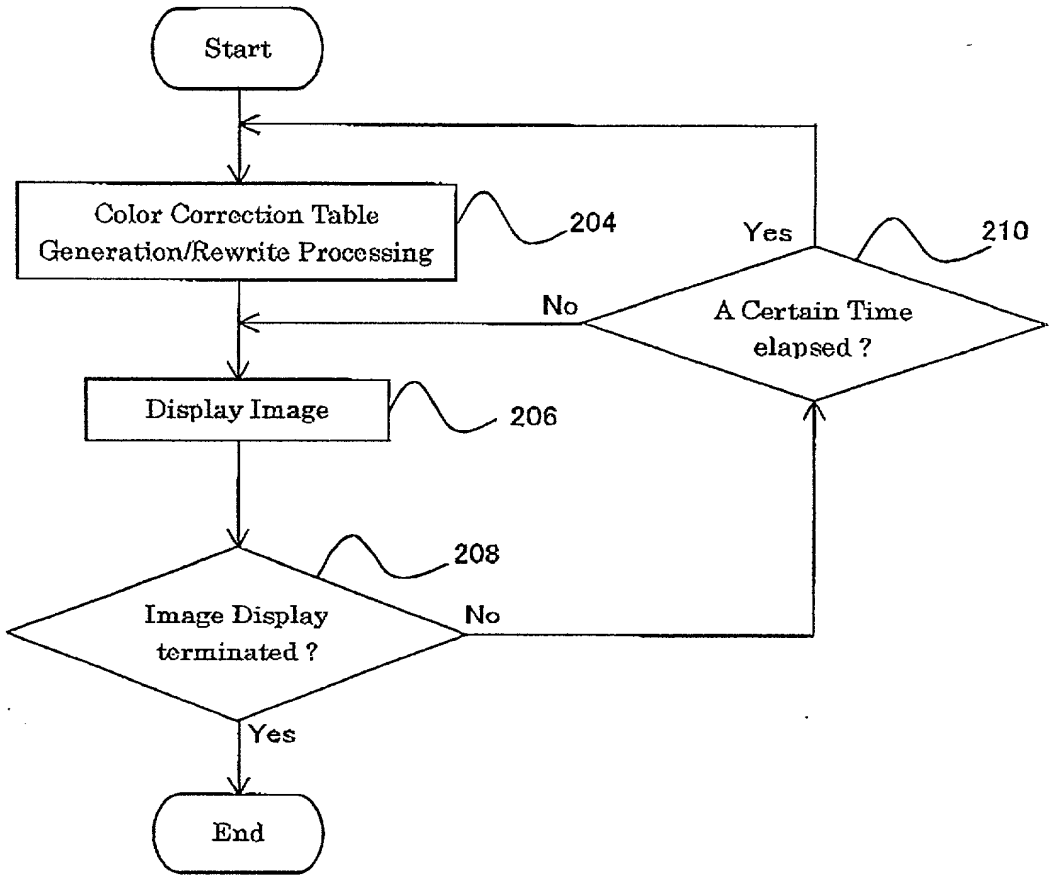
Start
Color Correction Table Generation/Rewrite Processing
204
Yes
210
No
A Certain Time elapsed ?
Display Image
206
208
Image Display terminated ?
No
Yes
End

FIGURE 3

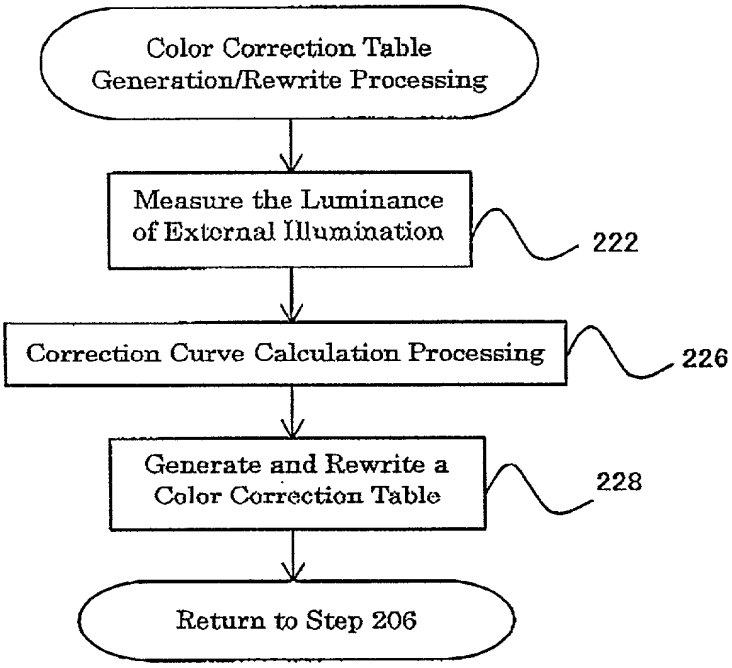

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FIGURE 4

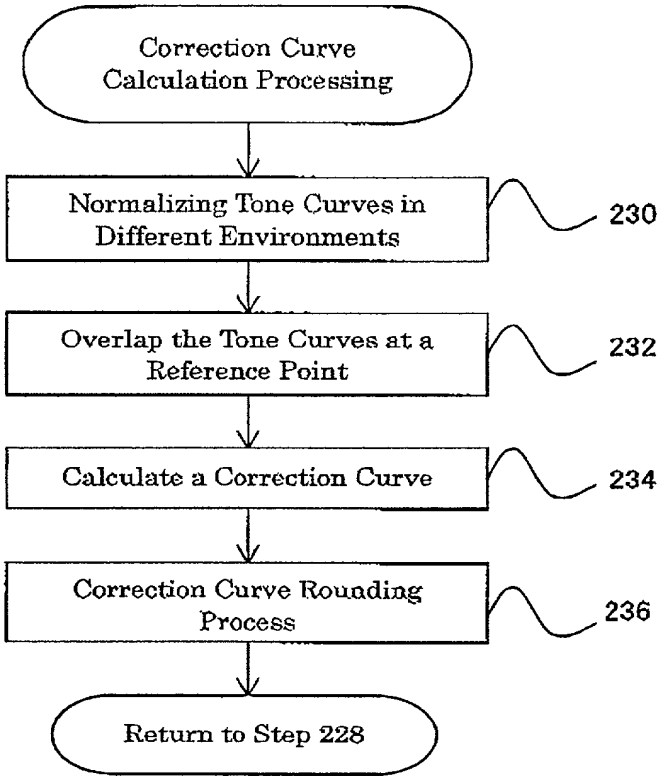
Correction Curve Calculation Processing
Normalizing Tone Curves in Different Environments
230
Overlap the Tone Curves at a Reference Point
232
Calculate a Correction Curve
234
Correction Curve Rounding Process
236
Return to Step 228

FIGURE 5

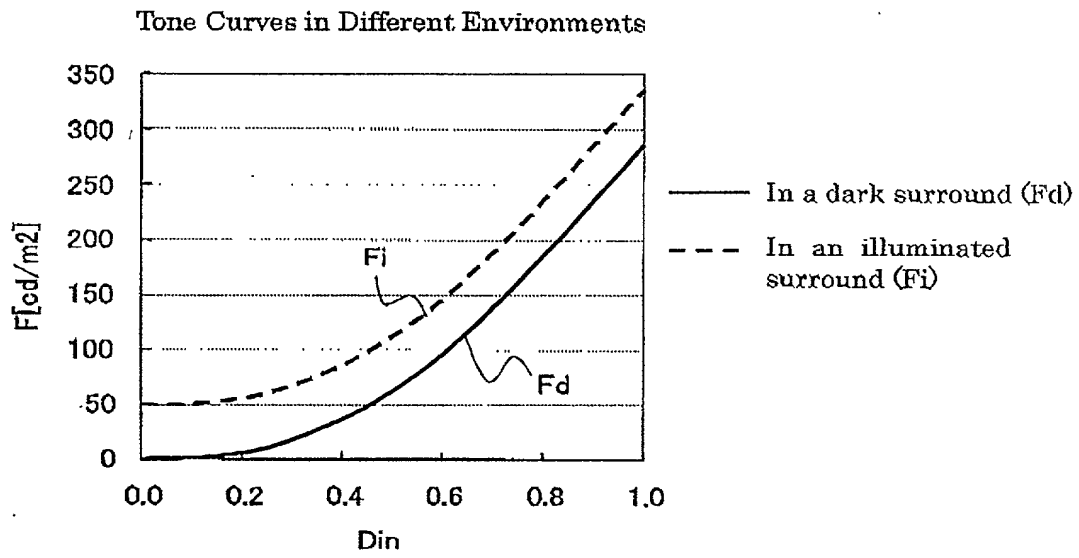
Tone Curves in Different Environments
350
300
250
200
150
100
50
0
F[cd/m2]
Fi
Fd
0.0
0.2
0.4
0.6
0.8
1.0
Din
In a dark surround (Fd)
In an illuminated surround (Fi)

FIGURE 6

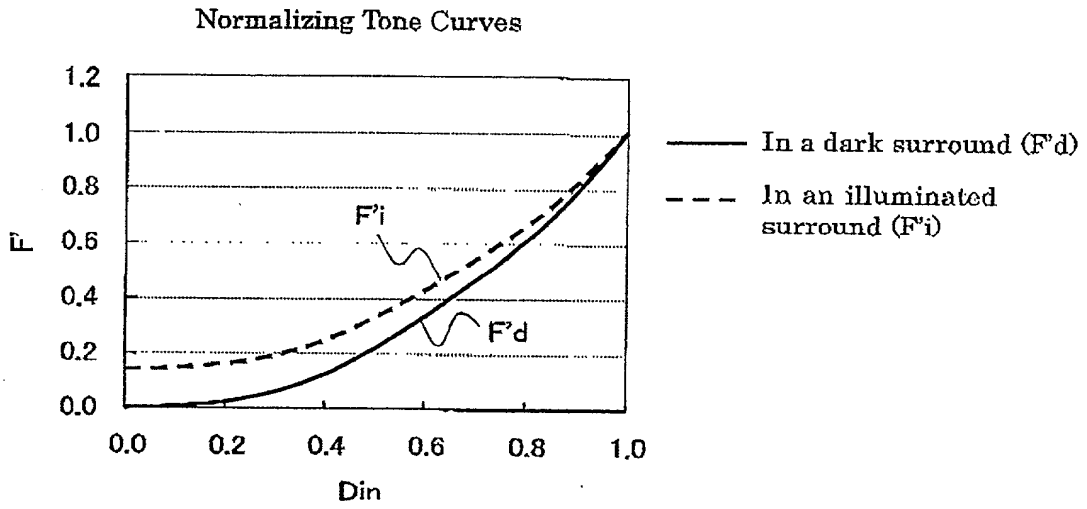
Normalizing Tone Curves
1.2
1.0
0.8
0.6
0.4
0.2
0.0
F'i
F'd
0.0
0.2
0.4
0.6
0.8
1.0
Din
In a dark surround (F'd)
In an illuminated surround (F'i)

FIGURE 7

Overlapping Tone Curves at a Reference Point Do

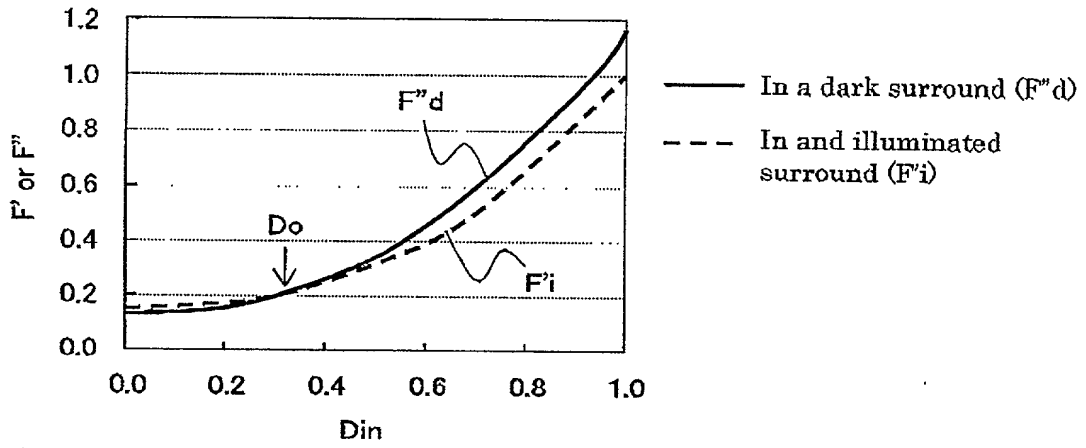

FIGURE 8

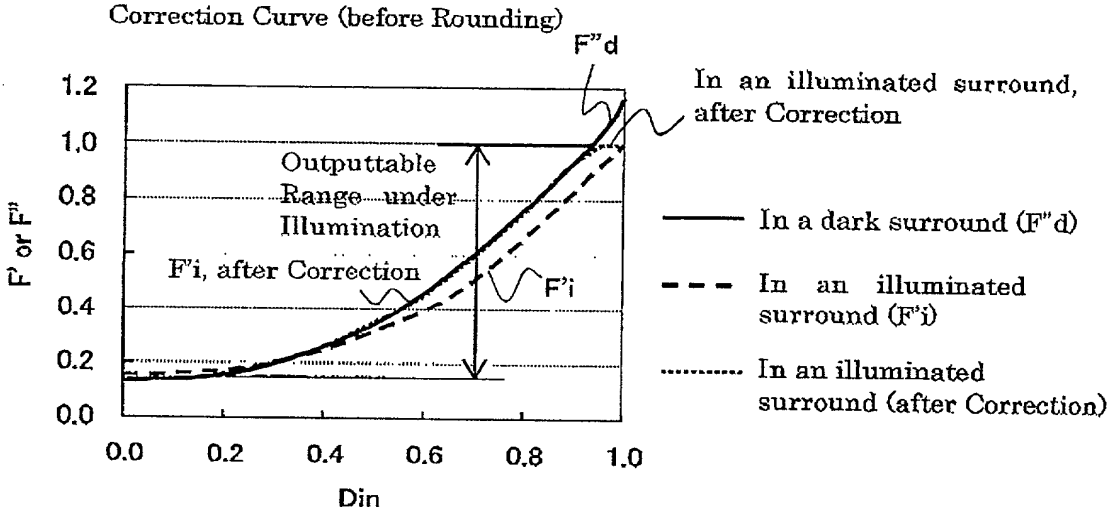
Correction Curve (before Rounding)
F"d
In an illuminated surround, after Correction
Outputtable Range under Illumination
F'i, after Correction
F'i
F' or F"
Din
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
In a dark surround (F"d)
In an illuminated surround (F'i)
In an illuminated surround (after Correction)

FIGURE 9

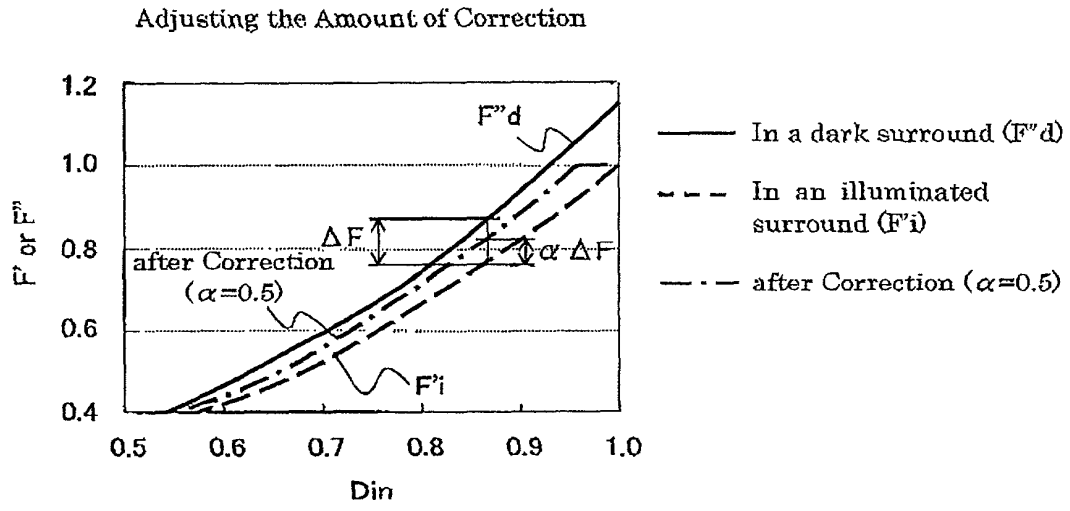
Adjusting the Amount of Correction
1.2
1.0
0.8
0.6
0.4
F' or F"
0.5
0.6
0.7
0.8
0.9
1.0
Din
F"d
F'i
ΔF
α·ΔF
after Correction
(α=0.5)
In a dark surround (F"d)
In an illuminated surround (F'i)
after Correction (α=0.5)

FIGURE 10

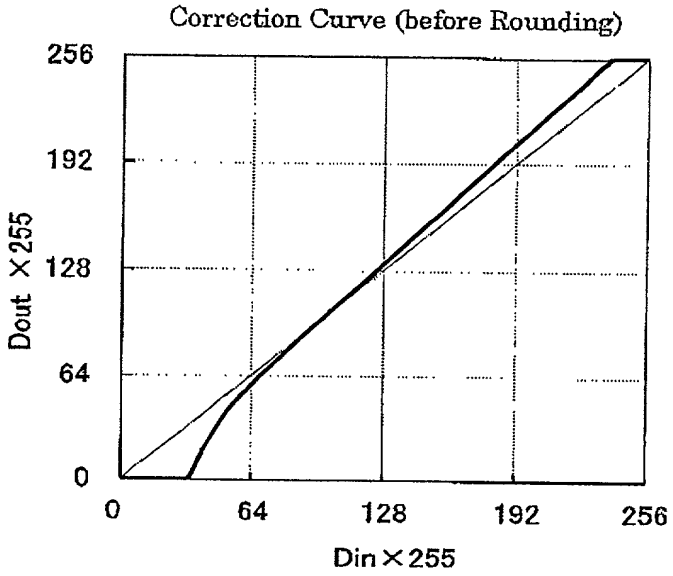
Correction Curve (before Rounding)
256
192
128
64
0
Dout ×255
0
64
128
192
256
Din×255

FIGURE 11

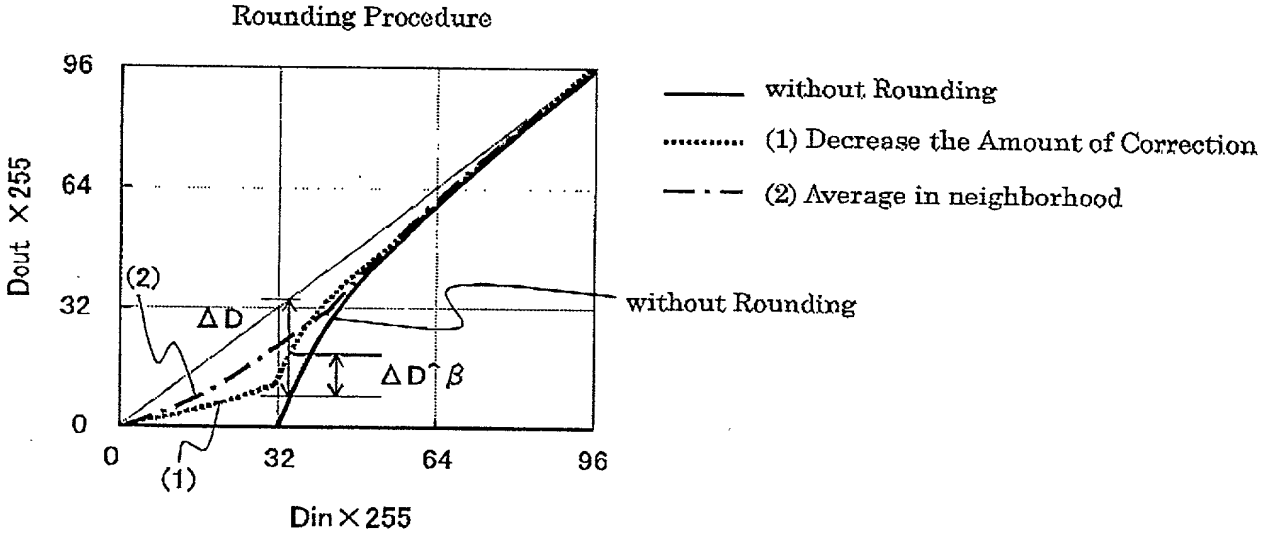

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FIGURE 12

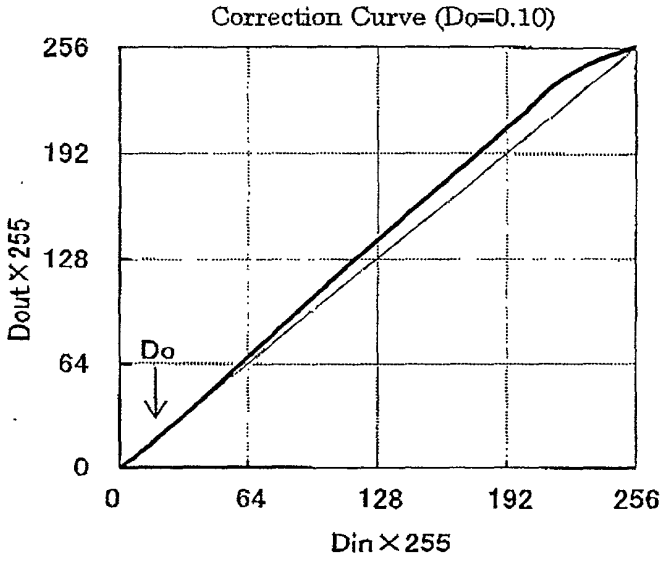

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FIGURE 13

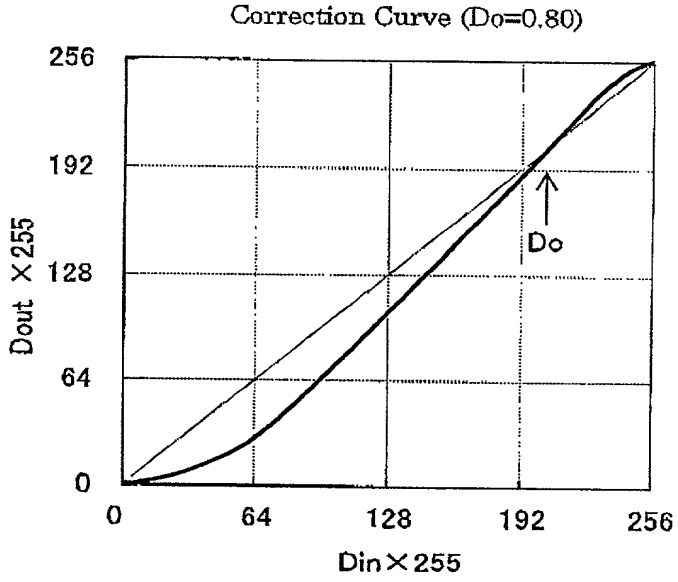

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FIGURE 14

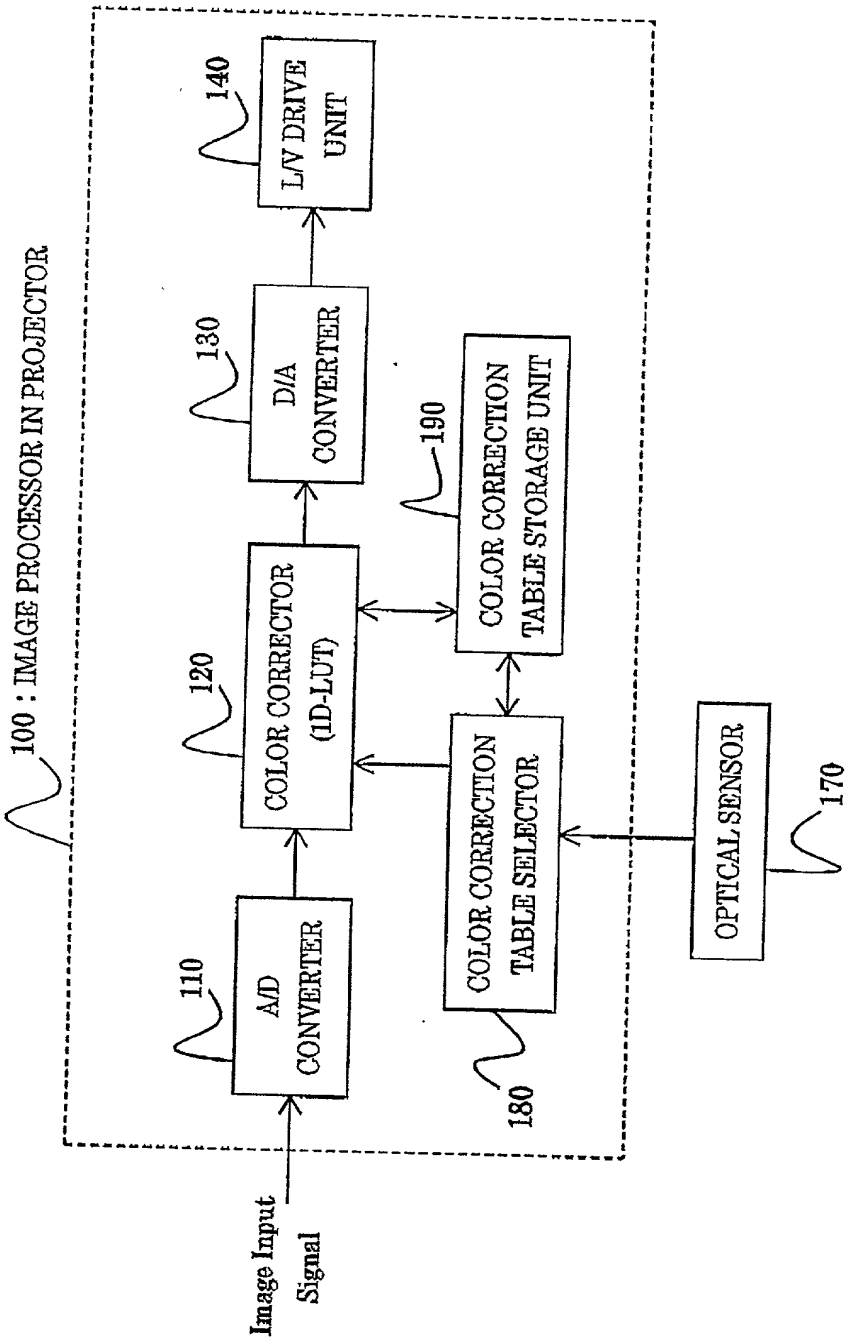
100 : IMAGE PROCESSOR IN PROJECTOR
Image Input Signal
110
A/D CONVERTER
120
COLOR CORRECTOR (1D-LUT)
130
D/A CONVERTER
140
L/V DRIVE UNIT
180
COLOR CORRECTION TABLE SELECTOR
190
COLOR CORRECTION TABLE STORAGE UNIT
170
OPTICAL SENSOR

FIGURE 15

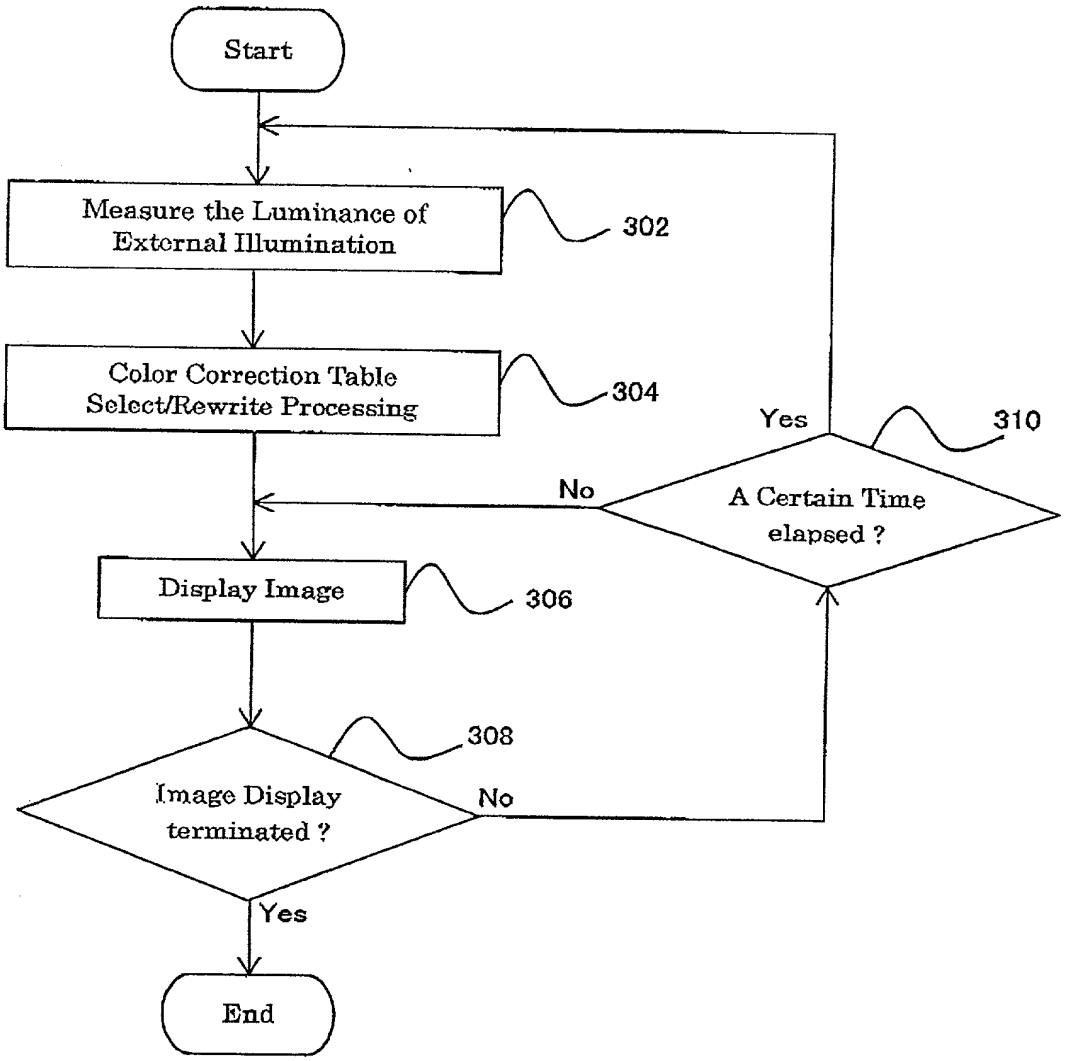
Start
Measure the Luminance of External Illumination
302
Color Correction Table Select/Rewrite Processing
304
Yes
310
No
A Certain Time elapsed ?
Display Image
306
308
Image Display terminated ?
No
Yes
End

FIGURE 16

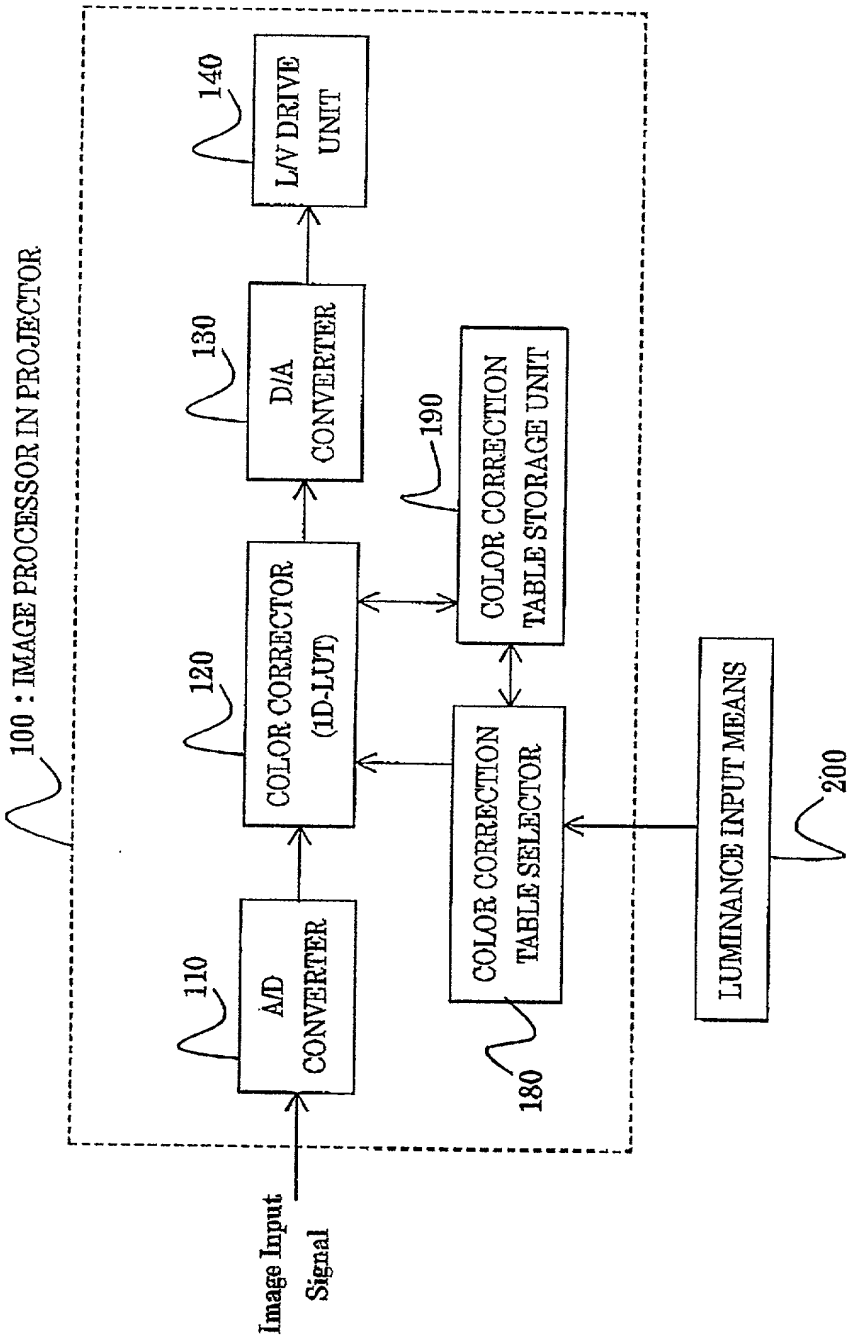
100 : IMAGE PROCESSOR IN PROJECTOR
Image Input Signal
110
A/D CONVERTER
120
COLOR CORRECTOR (1D-LUT)
130
D/A CONVERTER
140
L/V DRIVE UNIT
180
COLOR CORRECTION TABLE SELECTOR
190
COLOR CORRECTION TABLE STORAGE UNIT
200
LUMINANCE INPUT MEANS

FIGURE 17

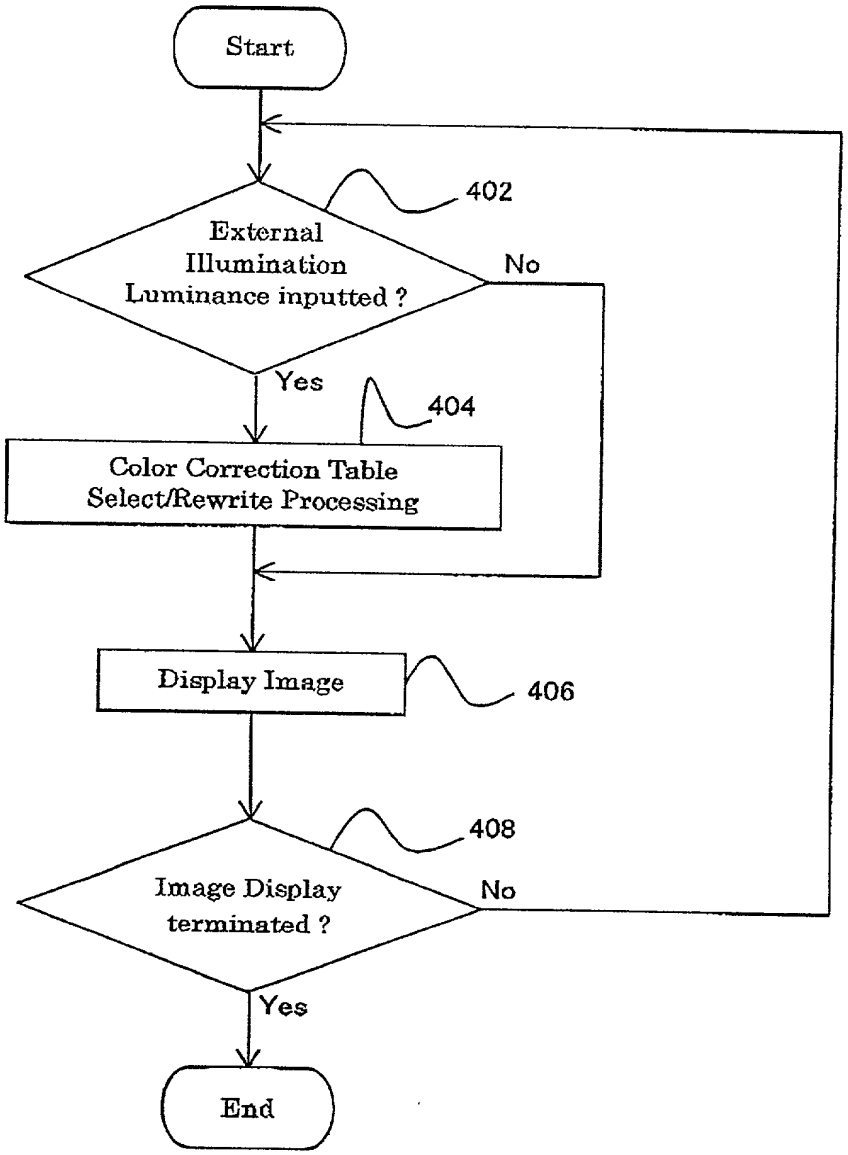
Start
402
External Illumination Luminance inputted ?
No
Yes
404
Color Correction Table Select/Rewrite Processing
Display Image
406
408
Image Display terminated ?
No
Yes
End

FIGURE 18